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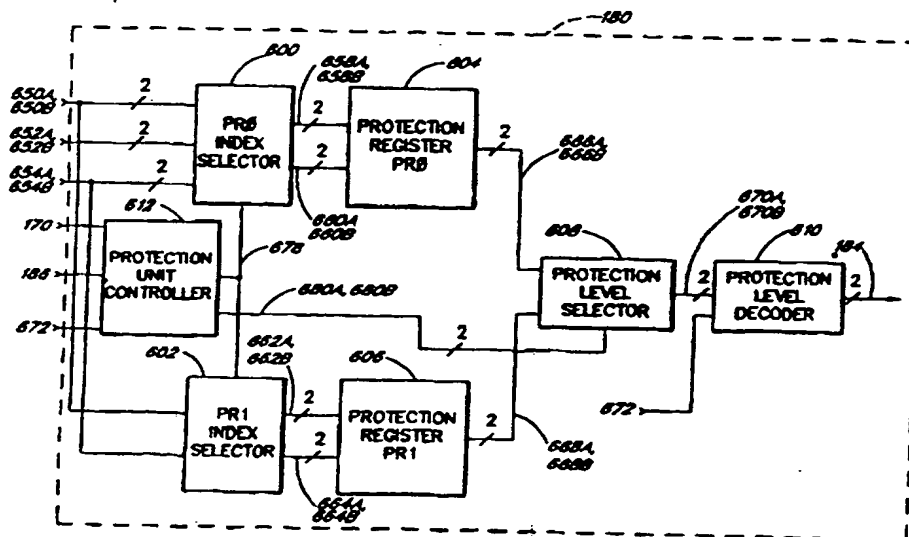
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8 September 1995 (08.09.95)

(54) Title: METHOD AND APPARATUS FOR DETECTING MEMORY SEGMENT VIOLATIONS IN A COMPUTER SYSTEM



## (57) Abstract

A protection mechanism for a microprocessor (100) has multiple privilege levels for tasks running on the microprocessor (100). A memory control unit (115) for the microprocessor (100) includes segment registers (200C, 200S, 200D, 200E, 200F, 200G) that identify segments (502-512) of memory (500) assigned to various tasks. When a segment register is loaded with the address of a new segment for a task, the protection unit (180) compares the privilege level of the task requesting the segment with the privilege level of the requested memory segment and determines whether the requested memory segment can be assigned to the requesting task. The relationship between the privilege levels is programmable to provide flexibility in the generation of privilege faults.

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US95/01648

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) : G06P 12/14, 12/06

US CL : 395/479, 480

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 395/479, 480, 800

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS

search terms: privilege level, segment, protection, violation, register, index, test, type

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 4,442,284 (CHILDS, Jr. et al.) 10 April 1984, e.g. note columns 1, 6 and 9-11.	1-11
X	US, A, 4,787,031 (KARGER et al.) 22 November 1988, note column 5 and Figure 2c.	1-11
X	US, A, 4,949,238, (KAMIYA) 14 AUGUST 1990, note the discussion of Figure 1 in columns 2-4.	1-11
X	US, A, 4,972,338 (CRAWFORD et al.) 20 November 1990, note the Abstract and columns 3-5.	1-11
X	US, A, 4,979,098 (BAUM et al.) 18 December 1990, note the Abstract and e.g. column 9.	1-11

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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*P	document published prior to the international filing date but later than the priority date claimed	*A	document member of the same patent family

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International application No.  
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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 5,144,551 (CEPULIS) 1 September 1992, columns 4-6.	1-11
X,P	US, A, 5,317,717 (CUTLER et al.), 31 May 1994, columns 2 and 10.	1-11
Y	US, A, 3,916,385 (PARMER et al.) 28 October 1975, columns 6, 9 and 10.	1-11
Y	US, A, 4,177,510 (APPELL et al.) 4 December 1979, columns 6, 9 and 10.	1-11
Y	US, A, 5,023,773 (BAUM et al.) 11 June 1991, note columns 10 and 18.	1-11

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